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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,310	04/07/2006	Jan Tuc Ravnkilde	HAM 830039	1592
62067 7590 10/16/2007 HUNTSMAN ADVANCED MATERIALS AMERICAS INC. LEGAL DEPARTMENT 10003 WOODLOCH FOREST DRIVE THE WOODLANDS, TX 77380			EXAMINER LEUNG, QUYEN PHAN	
			ART UNIT 2874	PAPER NUMBER
			MAIL DATE 10/16/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/559,310	Applicant(s) RAVNKILDE ET AL.	
	Examiner Quyen P. Leung	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 40-72 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 40-72 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claims 40-72 are pending.

Claim Objections

Claim 51 is objected to because of the following informalities: an ending period is missing. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 40-54, 56, 60-65, 68, 69, 70, 72 are rejected under 35 U.S.C. 102(e) as being anticipated by Smith (2003/0038327). Smith discloses the claimed invention.

Re claim 40, Smith's figures 1-2 illustrate an optical microelectromechanical structure (MEMS 100) comprising: (i) at least one optically transmissive layer (UTL, 126, see paragraph [0033] for the teaching of element 126 being of glass and therefore inherently being optically transmissive); (ii) at least one intermediate layer structure (IL, 136, 136a); (iii) at least one device layer (DL, 104); and (iv) a sealed package (100, see title) wherein the intermediate layer structure (IL 136, 136a) facilitates one or more

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optical paths (OP) between the optically transmissive layer (UTL 126) and the device layer (DL, 104) and wherein the intermediate structure layer (IL 136, 136a) defines a distance (d) between the optically transmissive layer (UTL 126) and the device layer (DL 104).

Re claims 41-44, 49, 62, 65, see paragraph [0035] lines 3-7 for the inherently electrically insulating layer(s) for the intermediate layer (136).

Re claims 45-48, note plate structure (126) and opening means (134).

Re claim 50, note columns (136, 136a).

Re claim 51, note base layer (128) to which the device layer (104) is attached.

Re claims 54 and 63, see paragraph [0033] for the teaching of the base layer (128) and the optically transmissive layer (126) being inherently optically transmissive because of the material of Pyrex glass teaching.

Re claims 52-53, figure 2 clearly shows this.

Re claim 56, see paragraphs [0030] and [0031] for movable parts of actuators.

Re claims 60-61, 72, figure 2 clearly shows this.

Re claim 64, see paragraph [0031] for the silicon device layer (104); and see paragraph [0032] line 3 for any doping.

Re claims 68, 70, Smith discloses a method of manufacturing an optical microelectromechanical structure (MEMS, 100) by bonding at least one optically transmissive layer (UTL) (126, 128—see paragraph [0033] for teaching of glass which is inherently optically transmissive) with at least one intermediate layer structure (IL) (136, 136a), and at least one device layer (DL) (104) to form a sealed package (see title), whereby optical transmission is facilitated between the optically transmissive layer (UTL) (126, 128) and the device layer (DL) (104) by removal of at least a part of the intermediate layer structure (IL) and whereby the distance between the transmissive layer (UTL) and the device layer (DL) is defined by the thickness of the intermediate layer structure.

Re claim 69, see paragraph [0042] for the etching of the device layer (silicon wafer 104).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 55, 57-59, 66-67, 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (2003/0038327). Smith has been discussed above except for the base layer being provided with through-holes (claim 55); or the intermediate layer comprising an insulating layer of a SOI wafer (claim 57); or the base layer or the

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optically transmissive layer comprising microlenses (claims 58-59); a light modulator arrangement including at least one movable microshutter (claims 66-67) or etching of the intermediate layer (claim 71).

Re claim 55, lacking any stated criticality it would have been an obvious choice of design to one of ordinary skill in the art to modify Smith by employing the through-holes when the base layer is optically non-transmissive.

Re claim 57, insulating layer of a SOI wafer is a well-known material. Lacking any stated criticality it would have been an obvious choice of design to one of ordinary skill in the art to modify Smith by employing insulating layer of a SOI wafer.

Re claim 58-59, microlenses are known for collimating or focusing light. It would have been obvious to one of ordinary skill in the art to modify Smith by employing the microlenses so as to advantageously collimate or focus light.

Re claims 66-67, Smith is silent to a light modulator arrangement including at least one movable microshutter. However, it is known to use MEMS device as a movable microshutter. It would have been obvious to one of ordinary skill in the art to employ the MEMS device of Smith as a microshutter. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Re claim 71, Smith is silent to the etching of the intermediate layer. Lacking any stated criticality it would have been an obvious design choice to one of ordinary skill in the art to modify Smith by employing well-known etching step.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bishop et al (6,400,009) teaches a hermetic firewall for mems packaging in flip-chip bonded geometry. Ma (6,808,955) teaches a method of fabricating an integrated circuit that seals a mems device within a cavity. Blair et al (7,003,192) teaches a micro opto electro mechanical device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quyen P. Leung whose telephone number is (571) 272-8188. The examiner can normally be reached on normally M-F, 6:15 am - 2:45 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quyen Leung/
Quyen Leung
Primary Patent Examiner
Group Art Unit 2874

qpl